

CLAIMS

1. A frequency shifting device comprising:
first means for providing a layer of optically refractive material having a moving refractive boundary responsive to an application of a traveling wave electrical signal and
second means for providing an electrical signal to said first means effective to
5 effect a predetermined frequency shift of an optical signal passing therethrough.
2. The invention of Claim 1 wherein said device includes an active polymer layer and a first optically conductive cladding layer above.
3. The invention of Claim 2 wherein said device further includes a microstrip line disposed over said first cladding layer.
4. The invention of Claim 3 further including an optically conductive second cladding disposed beneath said active polymer layer.
5. The invention of Claim 4 further including a ground plane beneath the said second cladding layer.
6. The invention of Claim 5 further including a quartz or silicon substrate disposed beneath said ground plane.

- 5 7. A frequency shifting device comprising:
- a substrate;
 - a ground plane disposed over said substrate;
 - an optically conductive second cladding layer disposed over said ground plane;
 - an active polymer disposed over said second cladding layer;
 - an optically conductive first cladding layer disposed over said active polymer,
 - a microstrip line disposed over said first cladding layer.
- 5 8. A continuous wave frequency converter comprising:
- first and second frequency shifting devices disposed in first and second optical paths respectively, each of said devices having a layer of optically refractive material with a moving boundary responsive to the application of an electrical signal and
 - means for providing an electrical signal to said first and second devices.
- 5 9. A method for continuous wave frequency shifting of an optical signal comprising the steps of:
- providing layers of optically refractive material having a moving refractive boundary responsive to an application of a traveling wave sinusoidal electrical signal and
 - providing electrical signals to said layers to effect a predetermined frequency shift of an optical signal passing therethrough.